RECENT ADVANCES IN DIRECT OXIDATION FUEL CELL TECHNOLOGY

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ABSTRACT

Development of fuel cells that can operate directly on fuels such as methanol and hydrocarbons has been pursued since the 1950's, Several synthetic fuels such as hydrocarbons, alcohols, aldehydes, glycols, and hydrazine have been considered for direct fuel cell applications, Among these fuels, methanol has received most attention in view of its widespread availability. Prior to 1990, The existing DMFCs exhibited limited performance i.e., low operating voltages (less than 0.3V) at low rates (less than 30 mA/cm^2). This performance level is far short of the power density required to compete with batteries. Recently, there has been a breakthrough in the development of DMFC technology at JPL in collaboration with Giner Inc. and USC. This breakthrough involved demonstration of an output of 300 ma/cm at 0.5 volts at 80-90°C which is 20 x higher than that reported to date.